

High Temperature Rechargeable Battery Development, Phase I

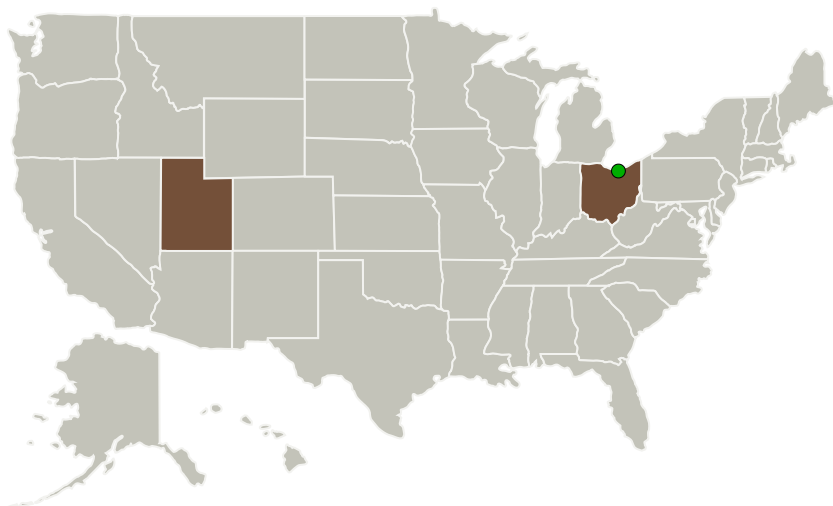
Completed Technology Project (2010 - 2010)




Project Introduction

This small business innovation research is intended to develop and proof the concept of a highly efficient, high temperature rechargeable battery for supporting Venus exploration missions. The proposed battery will be built upon a tubular, alkali metal ion-conducting, highly refractor, beta"-alumina-solid-electrolyte (BASE) sandwiched between an alkali metal anode and a metal salt cathode. In Phase I, BASE tubes possessing high strength, highly conductive, and high resistance to moisture and carbon dioxide attack will be fabricated and optimized using a novel coupled-transport process. Upon assembly with suitable electrochemical couples, battery cells will be tested and evaluated in a temperature range from 450°C to 600°C, followed by performance optimization.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Materials and Systems Research, Inc.	Lead Organization	Industry Minority-Owned Business	Salt Lake City, Utah
 Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations

Ohio

Utah

Project Transitions

**January 2010:** Project Start**July 2010:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139074>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Materials and Systems Research, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

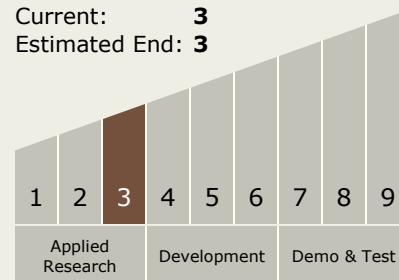
Program Manager:

Carlos Torrez

Principal Investigator:

Greg Tao

Technology Maturity (TRL)

Start: **3**Current: **3**Estimated End: **3**

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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System